



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C07C 219/06, 219/08, 215/24, C11D 1/62	A1	(11) International Publication Number: WO 00/53570 (43) International Publication Date: 14 September 2000 (14.09.00)
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(21) International Application Number: PCT/EP00/01738

(22) International Filing Date: 28 February 2000 (28.02.00)

(30) Priority Data:
99200638.7 5 March 1999 (05.03.99) EP

(71) Applicant (for all designated States except US): AKZO NOBEL N.V. [NL/NL]; Velperweg 76, NL-6824 BM Arnhem (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): AHRENS, Hartmut [DE/DE]; Mörfelder Landstrasse 19, D-60598 Frankfurt (DE). BERGFELD, Manfred, Josef [DE/DE]; August-Pfeffer-Strasse 6, D-63906 Erlenbach-Meichenhard (DE).

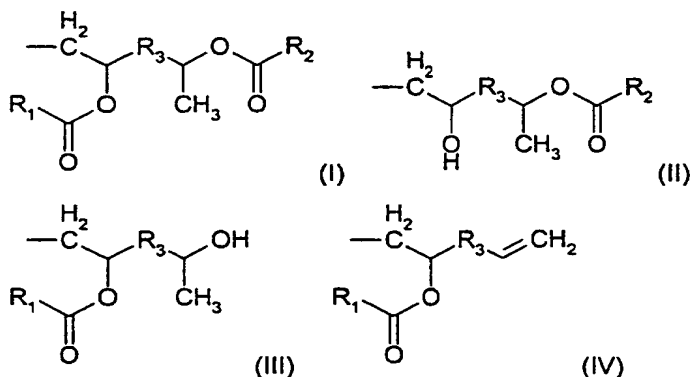
(74) Agent: SCHALKWIJK, Pieter, Cornelis; Akzo Nobel N.V., Intellectual Property Department (Dept. AIP), P.O. Box 9300, NL-6800 SB Arnhem (NL).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: ESTERQUATS, THEIR INTERMEDIATES, A PROCESS TO MAKE THE ESTERQUATS, AND THEIR USE



(57) Abstract

Esterquats, their intermediates, a process to make the esterquats, and their use as a fabric softener wherein said esterquats are of the formula: $\text{R}_4[\text{R}_5\text{R}_6\text{N}^+\text{Z}]_n \text{X}^-$, wherein Z is covalently bonded to the nitrogen atom and selected from the group of formulae (I)–(IV), and isomers thereof, wherein R_1 and R_2 are independently selected from linear or branched, saturated or unsaturated $\text{C}_6\text{--}22$ hydrocarbyl, R_3 is nothing or $\text{C}_{1\text{--}20}$ hydrocarbyl, R_4 is $\text{C}_{1\text{--}6}$ alkyl or independent Z, R_5 is H, $\text{C}_{1\text{--}6}$ alkyl, independent Z, or the residue of the quaternizing agent, such as $\text{C}_{1\text{--}30}$ alkyl or alkenyl, preferably, $\text{C}_{1\text{--}7}$ alkyl or alkenyl, R_6 is $\text{C}_{1\text{--}6}$ alkyl or independent Z, and X^- is an ion selected from Cl^- , Br^- , I^- , F^- , CH_3SO_4^- , $\text{C}_2\text{H}_5\text{SO}_4^-$, H_2PO_4^- , HPO_4^{2-} , PO_4^{3-} , H_2PO_3^- , HPO_3^{2-} , H_2PO_2^- , HPO_2^{2-} , nitrate⁻, formate⁻, acetate⁻, propionate⁻, tartrate⁻ and benzoate⁻, wherein the total charge of the anions equals the total charge of the cations and said process concerns the reaction of an unsaturated epoxide with an amine or a protonated amine, esterification of the formed intermediate, and optional quaternization.

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